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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/530,426

04/05/2005

Haruhiko Habuta

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53148

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EXAMINER

HIGGINS, GERARD T

ART UNIT

PAPER NUMBER

1794

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PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/530,426	<b>Applicant(s)</b> HABUTA ET AL.	
	<b>Examiner</b> GERARD T. HIGGINS	<b>Art Unit</b> 1794	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 05 April 2005.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-11 is/are pending in the application.
- 4a) Of the above claim(s) 8-11 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-7 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 05 April 2005 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>04/05/2005 and 01/15/2008</u> .                               | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Election/Restrictions***

1. Restriction is required under 35 U.S.C. 121 and 372.

This application contains the following inventions or groups of inventions which are not so linked as to form a single general inventive concept under PCT Rule 13.1.

In accordance with 37 CFR 1.499, applicant is required, in reply to this action, to elect a single invention to which the claims must be restricted.

Group I, claim(s) 1-7, drawn to an optical recording medium.

Group II, claim(s) 8-10, drawn to a method of manufacturing an optical recording medium.

2. The inventions listed as Groups I and II do not relate to a single general inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, they lack the same or corresponding special technical features for the following reasons: the special technical feature of Group I is that the "layer that is provided closest to a laser beam incident side of the plurality of information layers is taken as a first information layer." Another special technical feature of Group I is that the optical separating layer is provided "in contact" with the first information layer. These limitations are not seen throughout the Groups, and therefore there is a lack of unity of the inventions.

3. The examiner has required restriction between product and process claims.

Where applicant elects claims directed to the product, and the product claims are subsequently found allowable, withdrawn process claims that depend from or otherwise require all the limitations of the allowable product claim will be considered for rejoinder.

All claims directed to a nonelected process invention must require all the limitations of an allowable product claim for that process invention to be rejoined.

In the event of rejoinder, the requirement for restriction between the product claims and the rejoined process claims will be withdrawn, and the rejoined process claims will be fully examined for patentability in accordance with 37 CFR 1.104. Thus, to be allowable, the rejoined claims must meet all criteria for patentability including the requirements of 35 U.S.C. 101, 102, 103 and 112. Until all claims to the elected product are found allowable, an otherwise proper restriction requirement between product claims and process claims may be maintained. Withdrawn process claims that are not commensurate in scope with an allowable product claim will not be rejoined. See MPEP § 821.04(b). Additionally, in order to retain the right to rejoinder in accordance with the above policy, applicant is advised that the process claims should be amended during prosecution to require the limitations of the product claims. **Failure to do so may result in a loss of the right to rejoinder.** Further, note that the prohibition against double patenting rejections of 35 U.S.C. 121 does not apply where the restriction requirement is withdrawn by the examiner before the patent issues. See MPEP § 804.01.

4. During a telephone conversation with Douglas Mueller on 03/13/08 a provisional election was made with traverse to prosecute the invention of Group I, claims 1-7. Affirmation of this election must be made by applicant in replying to this Office action. Claims 8-10 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

5. Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

***Priority***

6. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

***Drawings***

7. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(4) because reference character “**102**” has been used to designate both the first substrate and the first information layer (see specification page 2, lines 5-14). Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either “Replacement Sheet” or “New Sheet” pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

8. Figure 4 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated (please see Figure 4 description in the specification at page 2, line 5 to page 3, line 25). See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

#### ***Claim Objections***

9. Claims 1 and 5 are objected to because of the following informalities:
- a. On line 5 of claim 1, "provided between information layer adjacent" is awkward.
  - b. On line 10 of claim 5, "the following relationships is satisfied" is awkward.
- Appropriate correction is required.

#### ***Claim Rejections - 35 USC § 112***

10. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

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11. Claims 1-7 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Applicants claim on lines 10-11 an "optical separating layer provided in contact with the first information layer is taken as the a first optical separating layer," but then go on to claim various other layers (transmittance adjusting layer and low refractive index layer) that are separating the first information layer and the first optical separating layer. This leads to confusion as to whether the first recording layer and first optical separating layer are actually "in contact" with one another, and hence render the claims indefinite. For the purposes of examination, the Examiner will treat these claims as if the layers are not directly in contact with one another.

### ***Claim Rejections - 35 USC § 102***

12. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

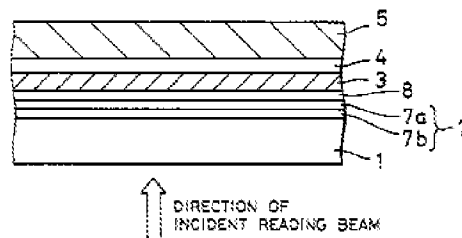
A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

13. Claims 1-3, and 6 are rejected under 35 U.S.C. 102(b) as being anticipated by Higuchi et al. (6,009,070).

With regard to claims 1-3, Higuchi et al. disclose the dual layer optical information medium of Figure 4B (col. 7, lines 14-36).

FIG. 4B



The device is comprised of a substrate **1**, on which there are bumps and depressions in the form of pits and grooves that make up the first optical information layer (col. 5, line 51 to col. 6, line 7). The laser for recording or reproduction is incident from the first information layer side of the medium. The layer **7b** is the transmittance adjustment layer, which is the same as part **2b**, which is disclosed at col. 6, lines 20-29, included among these materials are many of the materials that applicants state are completely appropriate for their invention (ZnS, ZrO<sub>2</sub>, etc.). There is a low refractive index layer **8**, which may be comprised of SiO<sub>2</sub> (col. 7, lines 24-29). Applicants state that this material is completely appropriate for their invention. There is a spacer layer **3** upon which is formed a series of bumps and depressions in the form of pits and grooves corresponding to a second information layer (col. 6, lines 30-43). The Examiner deems that pits and grooves represent a first information layer that can change between two optically different states, as these features represent recorded data.

With regard to claims 2 and 3, Higuchi et al. disclose at col. 7, lines 24-29 that the thin layer **8** is inserted to prevent other layers from being affected by moisture; further, they state that the material of the layer **8** is chosen such that it has a refractive index nearly equal to that of the spacer layer **3**. Judging by the fact that the materials of



Higuchi et al. are equivalent to the materials used by applicants, the refractive indices of the low refractive index layer and the first optical separating layer would inherently satisfy the relationships in applicants' claims 2 and 3.

With regard to claim 6, Higuchi et al. disclose that the low refractive index layer can be comprised of SiO<sub>2</sub> (col. 7, lines 24-29).

### ***Claim Rejections - 35 USC § 103***

14. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

15. Claims 5 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Higuchi et al. (6,009,070).

Higuchi et al. disclose all of the limitations of applicants' claim 1 in section 13 above. Additionally it disclose the reflective layer **7a** (see Figure 4B above); however, they fail to disclose the arrangement of the reflective layer seen in applicants' claim 5 and the thickness of the low refractive index layer of claim 7.

With regard to claim 5, the device of Figure 4A discloses a reflective layer **2a** disposed in between the recording layer (pits and grooves on substrate **1**) and the transmittance adjustment layer **2b**.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to reverse the layer arrangement of the reflective layer **7a** and the

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transmittance layer **7b** in the device of Figure 4B. It has been held that a mere rearrangement of parts that “would not have modified the operation of the device” is an obvious modification. Please see MPEP 2144.04 and *In re Japikse*, 181 F.2d 1019, 86 USPQ 70 (CCPA 1950). The interchangeability and addition of various reflection and dielectric layers are well known in the art of optical recording media to modify the properties of transmittance and absorption of light among the recording layers.

With regard to the mathematical relationships of the indices of refraction of the transmittance adjusting layer and the reflective layer, since the materials of the reflective layer (col. 6, lines 8-18) and the transmittance adjusting layer (col. 6, lines 19-28) are equivalent to those of applicants, the indices of refraction would intrinsically satisfy the mathematical relationships of claim 5.

With regard to claim 7, Higuchi et al. disclose one example of the low refractive index layer thickness at col. 7, lines 55-57; however, they do not disclose a thickness of 1 to 25 nm.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to vary the thickness of the low refractive index layer, including to those values claimed, in order to provide the proper amount of protection from moisture and residual monomers of the spacer layer while still maintaining the proper optical transparency of the optical medium.

16. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Higuchi et al. (6,009,070), as applied to claim 1, in view of Nishihara et al. (US 2002/0054983).

Higuchi et al. disclose all the limitations of applicants' claim 1 as seen in section 13 above; however, it fails to include a first recording layer comprised of a phase change material.

Nishihara et al. disclose a dual-stack optical recording medium, wherein the first recording stack includes a phase change material [0017] to [0021] that can change in between an amorphous and crystalline state.

Since Nishihara et al. and Higuchi et al. are both drawn to optical recording media; it would have been obvious to one having ordinary skill in the art at the time the invention was made to make use of the phase change materials of Nishihara et al. as the first recording layer of Higuchi et al. The results of which would have been predictable to one having ordinary skill in the art of optical recording media. The layers of Nishihara et al. have good recording/reproducing characteristics; furthermore, it is obvious to one in the art of optical media manufacture to make rewriteable optical discs because they are beneficial as multi-use optical recording media.

With respect to the requirement that the transmittance in the amorphous and crystalline states are both greater than 40%, Nishihara et al. state at [0026] that they want the average of the transmittance in the amorphous and crystalline states to be greater than or equal to 40%, especially at about 390-430 nm. It would have been obvious to one having ordinary skill in the art at the time the invention was made to make the transmittance in both the amorphous and crystalline states to be as high as possible, including the percentages claimed, such that enough laser light could reach

the second and subsequent recording layers in order to properly read and record to them without experiencing errors.

### ***Conclusion***

17. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Please see PTO-892.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to GERARD T. HIGGINS whose telephone number is (571)270-3467. The examiner can normally be reached on M-F 7:30am-5pm est. (1st Friday off).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Callie Shosho can be reached on 571-272-1123. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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Gerard T Higgins, Ph.D.  
Examiner  
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